Instrument Manager - 13

The incumbent is an Instrument Manager for Pre-Phase A instrument and mission conceptualization, science proposal development, Phase A and B instrument definition, Phase C/D instrument development, and Phase E mission operations support. The Instrument Manager is responsible for overall leadership, direction and management of major flight instrument developments.

Major Duties

The incumbent is required to perform the following major duties:

Provide overall direction for the instrument and mission conceptualization studies and science proposal development, and overall direction for the instrument and related ground system development efforts. This includes developing a staffing plan and defining, managing, negotiating, and obtaining in-house technical and business support from other GSFC organizations. Lead efforts in determining the proper hardware development role for GSFC, contractors and partners. The incumbent determines the types of functions and activities needed to successfully carry out program objectives and ascertains and negotiates for the variety of experience and skills necessary to perform the multifaceted tasks required to implement the program. This includes in-house as well as out-of-house work elements.

Negotiate with Principal Investigators (PIs) and Project representatives, and meet with Headquarters personnel, to establish instrument requirements. The incumbent translates, formulates and defines these broad instrument requirements to assure compatibility, between scientific objectives, technological feasibility, spacecraft interfaces, and cost and schedule constraints.

Recommend schedules and priorities to be followed for the development activities, and assure overall progress in meeting the requirements. He/She continuously reviews and analyzes the work performed and procedures used by support elements under his/her purview to determine progress in achieving the stated objectives, and investigates areas in need of improvement. In this respect, the incumbent will be continually faced with decisions involving the trade-offs between schedule, cost, and technical performance.

Prepare budgetary cost estimates and assure adherence to in-house manpower and cost limitations.

Develop work-around plans to mitigate technical, cost and schedule problems.

Review and approve changes to the original baseline instrument and spacecraft interface designs to avoid incompatibilities with instrument objectives.

Provide a single point of contact relative to plans, status of development and problems with the PIs, Project Offices, GSFC management, and NASA Headquarters.

Prepare and/or direct the preparation of statements of work and specifications**,** which include the technical parameters for the instrument, to ensure compatibility with the latest reliability and quality assurance requirements and other technical reporting required for the instruments. The incumbent evaluates contractor proposals for technical content and costs required to perform the assigned tasks and provides critiques and suggested alternatives to higher management. The incumbent is responsible for all decisions involved in developing, fabricating, and qualifying the instruments.

Assure that adequate test procedures are prepared for testing the instrument subsystems and components as well as associated non-flight hardware and software. During the actual integration and testing of the instrument with the spacecraft prior to launch, the incumbent must verify that the procedures being utilized are compatible with science requirements

Arrange for and guide the generation of post-launch operation plans for the instruments, and participate in the execution of all non-routine operational activities relating to the instruments.

Advise the PI's, GSFC management and other participating organizations of progress and problems as the incumbent implements the prime effort on this work. This also includes assuring that all reporting and documentation requirements are met, especially with respect to reports on technical, schedule, and cost performance.

Assume a leading role in design and other instrument project/program reviews. This includes conducting design and progress reviews of hardware partners and in-house contractor efforts. The incumbent is expected to make decisions to redirect in-house, hardware partner and contractor efforts including revising budgets and schedules as necessary.

Review the activities of technical officers who will be directing contracts for various subsystems/components. This review activity may include resource estimates, approval of procurement documentation such as requests for proposals and noncompetitive justifications (if required), change proposal evaluations and participating in Source Evaluation Board (SEB) activities.

Review and approve or concur in the expenditure of all funds associated with assigned instrument development.

Provide feedback to the appropriate administrative supervisors regarding the performance of assigned development team personnel.

Serve as a consultant in the planning and review of other programs as a specialist in spaceflight scientific instruments and related development programs.

Serve as a member of technical committees professional task groups and special boards as well as performing other duties as assigned.

FACTOR 1. KNOWLEDGE REQUIRED BY THE POSITION

The incumbent is required to have a B.S. degree in an appropriate field of engineering, mathematics or physical science. He/She must have the ability to specify the technical requirements for spaceflight hardware and to develop, test, and integrate such hardware with spacecraft. A working knowledge of GSFC capabilities for in-house spaceflight hardware development is required.

A working knowledge of spacecraft or space payload/instruments, including their data systems and ground test/data processing implementation is required. Comprehensive knowledge of the conceptualization, design, development, integration, testing, calibration, and qualification phases associated with payload/instrument development is also required.

The ability to plan, organize and direct an in-house spaceflight hardware development program with hardware partners is required. Consequently, the incumbent must have the ability to communicate effectively orally and in writing to individuals and with outside organizations such as NASA Headquarters, other Government agencies and universities. He/She must have the ability to direct large diverse groups of technical personnel such as aerospace contractors, hardware partners, and GSFC engineers.

The incumbent must also have a working knowledge of NASA procurement, contractual, funding and budgetary policies and practices applicable to managing R&D programs.

The incumbent must have the abilities to conceive and develop plans and to direct a complex, advanced state-of-the-art spacecraft payload development program, including generating the requirements for, and directing the activities of, engineering and support teams.

The incumbent must have the ability to solve a variety of technical management problems for which there are no precedents, and which involve trade offs between scientific technical capabilities of the hardware/software, and cost and schedule requirements.

FACTOR 2. SUPERVISORYCONTROLS

The incumbent works under the general administrative and technical direction of the Office Head. Receives broad objectives and administrative guidance from him/her on such matters as program objectives, mission constraints, budgetary limitations, schedules, and manpower constraints. The incumbent defines the methods to use in order to meet these objectives, developing the work assignments, and defining and modifying the scope, and objectives while in the course of planning and/or until an assignment is completed for the Office with other agencies and technical groups on

the technical matters within his/her purview. The incumbent's responsibilities in support of flight projects, SEB activities, and Support Research and Technology are coordinated directly between the incumbent and the respective project office, committee chairman, and managers.

Recommendations are normally accepted as those of a specialist and are largely unreviewed except where matters of policy, highly controversial issues or unproven concepts are concerned. Completed work is reviewed for feasibility in relation to requirements, and for conformance with overall policy and program objectives.

FACTOR 3. GUIDELINES

Duties in general have no established technical guidelines and involve a very high degree of originality and engineering judgment in formulating, developing, and evaluating unique theories, principles, and techniques or methods being studied, developed, or implemented for spaceflight missions. Technical findings are passed on to other technical personnel and groups within GSFC, other NASA centers, agencies and other outside organizations.

The incumbent must use considerable judgment and ingenuity in interpreting the intent of any policy guidelines that may exist, determining applicability to the particular project. The incumbent is expected to resolve technical problems by using initiative and resourcefulness and is also expected to take a leading role in solving any highly controversial technical or programmatic issues that may be encountered or anticipated.

FACTOR 4. COMPLEXITY

This assignment involves adapting advanced technology to all phases of the development cycle. The incumbent is responsible for the technical direction and management of a complex scientific spacecraft instrument payload development for which little or no precedents exist in terms of technical implementation. The incumbent must exercise sound judgment in trading off engineering options with cost and schedule while maintaining the scientific viability of the instrument.

The work consists of broad functions and processes including all aspects of technical management. The work encompasses all phases of development, including conceptual design, proposal development, preliminary design, final design, fabrication, assembly, integration qualifications/acceptance testing, delivery, system integration and test, launch, and post-launch operations. Technical and administrative issues are largely undefined and require management decisions based on studies, analyses, evaluation of programmatic changes, cost (budget) and schedule. The work requires continuing efforts to resolve potential and unforeseen problems.

FACTOR 5. SCOPE AND EFFECT

The purpose of this work is to technically manage the development of an advanced spacecraft instrument to obtain new scientific data of immense importance to earth or space science. This

instrument will permit new scientific knowledge to be attained and new technology to be developed, directly affecting future scientific endeavors of NASA. The work will contribute greatly to future directions in NASA's basic mission of space exploration

FACTOR 6. PERSONAL CONTACTS

During the normal course of this assignment, the incumbent has extensive contacts with senior members of other GSFC entities, instrument, spacecraft, and mission managers; science working groups; principal investigators, universities; contractors; JPL; other NASA centers; NASA Headquarters; and other government agencies.

FACTOR 7. PURPOSE OF CONTACTS

The purpose of the personal contacts is to: influence, justify, and defend technical approaches as well as cost and schedule requirements, negotiate program content as well as resources (funding and manpower) support, justify proposed changes in interface requirements, take a leading role in conferences and meetings relative to instrument reviews; exchange factual information, data and technical plans: provide advice related to instrument research and development activities, negotiate and establish technical requirements and make recommendations relating to progress and/or problems of a technical, cost or schedule nature.

FACTOR 8. PHYSICAL DEMANDS

The work is primarily sedentary and has no unusual physical requirements. Travel is required to attend meetings, conferences and reviews. There are also periods of stress where rather large amounts of data are required to be assimilated and then used to make decisions or recommendations.

FACTOR 9. WORK ENVIRONMENT

The incumbent will spend most of his/her time in an office type environment, but will be required to spend some time in laboratories and test facilities that may contain radiation, high voltage electronics and other hazards.